ADDENDUM FOR DSO 605 "RECOVERY OF POSTURAL EQUILIBRIUM CONTROL FOLLOWING SPACE-FLIGHT"

DATA CONFIDENTIALITY PLAN

Strict confidentiality of the data will be maintained per the Johnson Space Center Management Directive No. 1382.5 dated 2/27/90. Astronauts and Shuttle missions will be coded within the Neurosciences Laboratory and in accordance with the Extended Duration Orbiter Medical Project (EDOMP) Data Tracking and Analysis Plan and the EDOMP Data Sharing Plan. Raw data will be stored on floppy disks, Syquest drives, video tapes, microcassette tapes, and hard copies. The data will be labelled with the mission code number, DSO number, date, astronaut code number, and the experimental condition. The reduced data will be stored on floppy disks, Syquest drives and hard copies. A NASA Form 1534 (Privacy Act of 1974) will accompany all data. One person in the Neurosciences Laboratory will code the data. Only that person, the principal investigator, and co-investigators will have access to both the crewmember's name and code. The laboratory support personnel will work with coded data and will not have access to the crewmember names. Also, outside investigators will work only with coded data. All data and all media will be stored in locked cabinets.

DSO SPECIFIC QUESTIONS

See attached.

DSO 605 "RECOVERY OF POSTURAL EQUILIBRIUM CONTROL FOLLOWING SPACE-FLIGHT" MOTION PERCEPTION REPORTING

Crewmembers will participate in a one hour preflight training session for motion perception reporting. The training session will include: 1) review and definition of motion perception vocabulary terms, categories of motion perception disturbances and examples of previously reported in-flight, entry, and postflight motion perception disturbances; 2) demonstrations of perceptual illusory phenomena; and 3) practice using the motion perception vocabulary while experiencing altered sensory conditions. The Preflight Adaptation Trainers (PATs) will be used to provide these novel sensory inputs/conditions.

Preflight Motion Experience History

1. How many previous missions have you flown? _____
2. Are you a pilot? _____ No (proceed to question 4)
   _____ Yes _____ Military _____ Private

3. Have you flown aerobatic maneuvers? (proceed to question 4)
   1. _____ No
   2. _____ Yes

3a. What type of aircraft do you most often fly? _____

3b. How often do you fly aerobatic maneuvers? _____

3c. Describe the type of aerobatic maneuvers you perform.

_____

_____

3d. How susceptible are you to motion sickness during aerobatic maneuvers? Code# _____

Not at all	Minimally	Slightly	Moderately	Very	Extremely
0	1	2	3	4	5

3e. What type of maneuvers produce sickness symptoms?

_____

_____

4. Using the code/description for motion sickness susceptibility presented below, how susceptible are you to:

_____ car sickness
_____ seasickness
_____ simulator sickness
_____ carnival rides

Not at all	Minimally	Slightly	Moderately	Very	Extremely
0	1	2	3	4	5

IN-FLIGHT EXPERIENCE

Spatial Orientation

5a. Before initiating a change in my location inside the orbiter, I

_____ always know in which direction I should move without thinking about it.

_____ had to stop and think about my current location and the direction in which I should move in order to reach my intended location.

_____ had to stop and think about my current location and intended direction only if I were in an orientation other than with feet towards the deck.

5b. At what time during the mission did changing your location become "automatic"? _____ MET.

6. Were you aware of the position of your limbs with respect to your trunk or with respect to each other?

Eyes open: _____ yes _____ no
Eyes closed: _____ yes _____ no

If yes, did awareness return when you moved a limb?
_____ yes _____ no

7a. During times when your body orientation was other than with your feet towards deck, did you experience any of the following?

_____ Time delay in changing "internal" orientation to match new orientation within the orbiter

_____ Longer time than "normal" reading switch positions

_____ Longer time than "normal" recognizing objects

_____ Motion sickness initiated

_____ Motion sickness exacerbated

Did these change over the course of the mission?
_____ Yes _____ No

7b. During times when your body orientation was Earth vertical with respect to the orbiter, did you

_____ always feel Earth-vertical
_____ feel that your body was at some angle (_____ deg). This perception was resolved by _____ MET.

8. What happened when reaching for objects in flight?

_____ No problems
_____ Overshot target
_____ Undershot target

If you overshot or undershot targets, at what point in time during the mission was this resolved? _____ MET.

9. Did you have difficulty moving in zero-g? If yes, describe the experience, when it occurred, and if it improved with time and/or practice _____
_____
_____
_____

Motion Perception

10. Using the terms contained in the Motion Perception Vocabulary, describe any illusory self- or surround-motion experiences; note the type of head or body motion performed, the phase of the mission, whether eyes were open or closed, and the perception elicited:

Head/Body Motion	When?	Eyes open/closed	Perception
_____	_____	_____	TYPE: ____ self ____ surround
_____	_____	_____	PATH: _____ curved
_____	_____	_____	_____ straight
_____	_____	_____	_____ mixed
_____	_____	_____	DIRECTION: _____ same as HM
_____	_____	_____	_____ opposite to HM
_____	_____	_____	PHASE _____ lag _____ how much
_____	_____	_____	_____ no lag
_____	_____	_____	AMPLITUDE (gain):
_____	_____	_____	_____ velocity > input
_____	_____	_____	_____ velocity < input
_____	_____	_____	_____ displacement > input
_____	_____	_____	_____ displacement < input
_____	_____	_____	_____ velocity w/o displacement
_____	_____	_____	_____ displacement w/o velocity

11. During treadmill or other forms of exercise on-orbit did you experience any of the following:

_____ perception that the orbiter moved up/down while running, or fore/aft while rowing, etc.

_____ trouble with vision, i.e. difficulty focusing

_____ perception that head or limb movements were exaggerated
_____ velocity _____ displacement

_____ sensation of linear movement during motion that you would otherwise associate with a tilt or an angular motion
_____ direction _____ magnitude

Neurosensory Perceptions

When answering questions 12-14, write the letters corresponding to the perceptions that apply; add any sensations or experiences not listed if appropriate.

a. visual streaming
b. oscillopsia
c. illusions of object motion
d. illusions of object position
e. illusions of depth/contour
f. changes in visual acuity
g. sensation of discomfort or "something is wrong"
h. time delay in refocusing an object (accommodation problems)

12. What happened when you shifted your gaze from near objects to far objects or vice versa? _____

13. What happened when you moved close to a wall or corner? _____

14. What happened when reading switches or checklists? _____

ENTRY

15. Indicate the extent of your duties and/or activities during entry:
_____
_____
_____

16. Identify the sensations you experienced from the onset of G-forces until wheels stop:

_____ felt abnormally heavy
_____ felt awkward during movement (describe the movement)
_____
_____
_____ changes in visual acuity
_____ other; describe _____
_____
_____
_____

WHEELS STOP AND EGRESS

17. Did the attitude of the orbiter at wheels stop feel like something other than straight and level?

Describe _____
_____
_____
_____

Identify the sensations you experienced just after landing:

18. When I first stood up from my seat I
_____ felt normal
_____ felt stable with eyes open
_____ felt unstable with eyes open
_____ felt stable with eyes closed
_____ felt unstable with eyes closed
_____ other

19. When I walked around on the middeck
_____ my movements felt normal
_____ my movements felt exaggerated/magnified
_____ I felt weakness in my limbs
_____ I felt dizzy
_____ I limited my head/body movements because _____
_____
_____

20. During egress
_____ my movements felt normal
_____ my movements felt exaggerated/magnified
_____ had to hold on to the railing for stability while descending the stairs
_____ felt very unstable as I walked around the orbiter
_____ limited my head/body movements because _____
_____
_____

21a. Was there a "dead band" within which it was difficult to determine your head position with eyes closed? _____ yes _____ no

21b. If there was no "dead band", but movement of head and body felt exaggerated, was there some difficulty in determining the limits of stability? _____ yes _____ no

POSTFLIGHT

22. Do you feel normal, i.e., free of neurosensory disturbances while performing the following activities:

	Yes	No
Standing stationary	_____	_____
Walking	_____	_____
Turning corners	_____	_____
Driving a car	_____	_____
Riding in a car	_____	_____
Lying in bed at night	_____	_____
Bending over (forward/ backward, or to the side)	_____	_____

Describe your sensations for any activities where you had presisting illusory phenomena or any perceptual after effects following landing and note time and place of occurrence.

_____
_____
_____
_____
_____